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The Year in Review: Economics at the Antitrust Division, 2008–2009

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Abstract This paper covers the activities of the Economic Analysis Group (EAG) of the Antitrust Division, U.S. Department of Justice, during 2008–2009. It describes the economic analysis undertaken by EAG in several important investigations, and in other activities as an advocate for competition.

Keywords Antitrust · Competition · Mergers

1 Introduction

During the past year the Economic Analysis Group (EAG) of the Antitrust Division, U.S. Department of Justice, has been engaged actively in providing economic analysis on a wide range of interesting and important matters. A substantial share of its

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efforts was devoted to merger review; however, considerable attention was given also to other competition matters, including a review of a significant proposed joint venture between two on-line giants. Other activities included the preparation of formal comments to regulatory agencies and filings with the courts.

In addition, building on its efforts over the past few years, EAG has through the research efforts of its staff served as an advocate for competition. It has done so by publishing work intended to influence and help improve the design of rules and regulations with a potentially significant impact on competition and, more generally, the performance of the economy. The Division's economists have also continued to play an important role in the training of attorneys and other economists, both inside the Division and out, and both domestically and internationally.

In this review article we report on a number of these activities, with a particular emphasis on ones that raised interesting or complex economic issues. In the area of mergers, we discuss the economic analysis performed by the Division's economic staff in the investigation of proposed mergers between Coors and Miller (beer), JBS and National (beef packing) and Northwest and Delta (airline travel). Following that, we provide a somewhat more detailed discussion of the Division's investigation into the proposed joint venture between Yahoo! and Google.

We also report on two of the Division's important competition advocacy efforts: One of these resulted in the filing of formal comments with the Department of Transportation in which we opposed certain expanded elements of antitrust immunity sought by the Star international airline alliance. In another, drawing substantially on input from the Division's economists, the Department filed an amicus brief with the 2nd Circuit Court of Appeals articulating the Division's position with respect to so-called "reverse payment" patent settlement cases.

In our discussion of these investigations, partly due to space limitations and partly due to confidentiality considerations, we resist the temptation to present in its entirety the Division's analysis of all the important evidence, or all of the relevant economic issues and arguments. We refrain also from even attempting to provide a complete explanation for why each matter was decided the way it was. Rather, in the interests of focusing on the interesting economics at issue, we at times highlight only the main facts, omitting some details, without in our view doing injustice to the critical economic arguments in play in these cases. For the purposes of these year-in-review articles, the precise facts of a given investigation are of far less importance than is a more general description of the analytical work performed by the Division's economists.

Finally, during the past year economists at the Division continued to publish a considerable amount of original research. Much of this research was based on casework, but a significant fraction dealt with antitrust, applied microeconomics, and econometrics generally. Some of this research was published as part of our EAG Discussion Paper series and included timely papers on the banking industry (Raskovich 2008), failing firm defense in merger analysis (Heyer and Kimmel 2009), and consumer demand for fuel economy (Langer and Miller 2008).¹ Among the several publications by our staff economists in professional journals were papers on corporate leniency and

¹ A complete list of recent and historical EAG Discussion Papers can be obtained at http://www.usdoj.gov/atr/public/eag/discussion_papers.htm or by emailed request to janet.ficco@usdoj.gov.

cartel enforcement (Miller 2009), remedies for exclusionary conduct (Werden 2009), and assessing the anticompetitive effects of multiproduct pricing (Carlton et al. 2008).

2 Mergers

2.1 Miller/Coors: Efficiencies Brewing

In late 2008, SABMiller plc (Miller) and Molson Coors Brewing Company (Coors) announced their proposal to enter into a joint venture under which the companies would combine their beer operations in the United States and Puerto Rico. The proposed joint venture was analyzed in much the same way the Division evaluates proposed mergers, and after an 8-month investigation the Division announced that the deal was not likely to lessen competition substantially.

At the same time that it announced that it had no intention of challenging the joint venture the Division stated publicly that “In one of the key parts of the investigation, the Division verified that the joint venture is likely to produce substantial and credible savings that will significantly reduce the companies’ costs of producing and distributing beer.” The type of efficiencies that the Division found credible in this matter, and the evidence it relied upon in reaching its decision, are worthy of some discussion. First, however, we briefly provide some background on the industry and the pre-venture competition within it.

Miller and Coors were at the time of their proposed joint venture two of the three largest beer producers in the country (the third being Anheuser–Busch [AB], whose size exceeded that of either Miller, or Coors, or a combined Miller/Coors). Although numerous domestic and imported beers competed against “the big three” in one or more regions of the country, none had a substantial share of sales. For whatever combination of historical and other reasons, sales of the most widely-known brands—products produced and sold by Miller, Coors, and A–B, greatly exceeded those of their rivals.

Concentration in relevant markets was quite high, though (as noted above) the Division found it unlikely that the proposed venture would lessen competition substantially. From the perspective of possible anticompetitive unilateral effects, our investigation determined that, by far, the greatest competition faced by both Miller and Coors came from A–B, not from one another. Relevant evidence consisted not only of documents from the parties and their large rival, but also from an empirical examination of sales data.

It was also found that the proposed venture would be unlikely to make coordination among firms in the industry significantly more likely, more complete, or more durable. Neither Coors nor Miller appeared to represent likely coordination-disrupting “mavericks,” and the prospect of significant cognizable efficiencies (discussed below) made net anticompetitive coordinated effects even less likely.

Our lengthy investigation of this proposed venture confirmed the parties’ assertions that combining their beer operations was likely to produce large and cognizable efficiencies. A considerable fraction of these efficiencies represented variable cost savings that directly affected the merged entity’s pricing incentives, while other claimed benefits appeared likely to produce nontrivial fixed cost savings. Much of the

efficiencies involved freight cost savings that were based on the ability of the merged firm to redistribute production of the parties' two brand portfolios across the venture's multiple plants, which were geographically dispersed.

At the time of the transaction, Coors primary production facility was located in Golden, CO, with a secondary facility in Elkton, VA. The several Miller plants were distributed more widely throughout the country; from WI to OH to TX to CA. Customers of the two firms' products were distributed throughout the country, and by, for example, moving Coors production into some of the Miller facilities (which did not appear in most cases to be operating at or near capacity), average shipping costs across the combined firms' plants could be reduced considerably.

Significantly, in addition to these claimed efficiencies being plausible on their face, additional and non-pretextual evidence helped confirm not only that they were likely to be achieved, but also that they would be substantial in magnitude. Miller had, prior to its decision to join with Coors, commissioned a business consulting firm to analyze potential industry combinations. That firm modeled freight efficiencies as the current combined stand alone freight cost less the model-derived combined freight costs after redistributing optimally the firm's products across production facilities. We examined the firm's modeling approach and found it and its resulting estimates to be reasonable.

Finally, and as further confirmation of our analysis, the internal analyses of others in the industry-third parties not involved directly in the deal-tended at least broadly to track the claims put forward by the joint venturing firms. In evaluating the implications of the deal for their own business fortunes, these potentially affected third parties examined a potential Miller-Coors combination and reached conclusions consistent with those reached by the Division's economists.

Efficiencies analysis in merger cases is often quite difficult. Assertions can be difficult to test, and even plausible arguments may be subject to legitimate skepticism. However, in matters where we have multiple pieces of evidence that are independently developed, facially plausible, and mutually consistent and reinforcing, our confidence in our conclusions is heightened considerably.²

2.2 JBS/National/Smithfield: The Division's Beef with a Proposed Merger of Packers

In deals announced in March 2008, JBS, (the Brazilian owner of significant US beef processing operations), bid to acquire both the National Beef Packing Company (National) and the Smithfield Beef Group (Smithfield). The acquisitions would have combined the nation's third, fourth and fifth largest beef packers and created a new largest firm in the industry. In evaluating the proposed acquisitions, among the

² It may be worth commenting briefly on the fact that the Division did recently challenge a merger of two other beer manufacturers—Anheuser-Busch and InBev. That deal was permitted to proceed only after adequate divestitures were specified in a formal Consent Decree. In the latter Anheuser-Busch/InBev matter we found the two firms to be one another's principal competitors in a relevant geographic market (upstate New York) and, unlike in the case of Miller/Coors, the evidence for merger-specific efficiencies was very weak.

key economic issues evaluated by the Division's economists were geographic market definition and competitive effects.³

Beef processors compete both in procuring cattle from farmers and in selling packaged products to retailers. Transportation and other cost considerations may make relevant geographic markets for purchasing cattle much narrower than are geographic markets for selling packaged beef products. A hypothetical single purchaser of cattle within a geographic region narrower than the entire United States might well have considerable monopsony power over cattle farmers in that region even if a hypothetical single seller of the packaged beef coming from that region could not profitably raise prices to retailers.

It is, of course, entirely possible that an exercise of monopsony power in regional markets could be economically inefficient and welfare-reducing even if the prices paid by consumers of final products remains unaffected. For example, paying lower prices to suppliers whose marginal cost is upward sloping will call forth less supply from them. This may prove profitable to the purchaser even if there is a highly elastic supply forthcoming from non-victimized producers—additional sales from whom would protect final consumers from a price increase. In such cases, final consumers of the product are not harmed, however the economy is performing below its potential because it is producing an unchanged quantity of the product less efficiently.

The Division's analysis in this matter incorporated considerations of potential harms both upstream (the purchase of cattle from feedlots by regional packing facilities) and downstream (the sale of graded boxed beef by packers to retailers). We found a significant likelihood that the merger might lead not only to competitive harm from lower prices paid to regional cattle suppliers, but also harm to final consumers of beef. This latter effect, which was predicted to be quite modest in percentage terms, arose in part from the fact that although cattle breeders might, in principle, attempt to protect themselves by shipping small "feeder" cattle outside the region prior to fattening and slaughter,⁴ unutilized packing capacity in the hands of independent firms located outside the region was quite limited.

The Division's upstream concerns were both that the merger might enable the merged firm unilaterally to reduce price for fed cattle in the affected region, and also that market conditions might facilitate coordinated pricing for fed cattle among the region's few remaining significant packers. One of the techniques used by the Division's economists to evaluate the likelihood of competitive harm upstream was to employ cross-section econometric analysis of how winning bids for cattle at feedlots varied as a function of the number of independently owned packing facilities located within various distance bands around the feedlot.

We found, after controlling for other relevant variables, that winning bids tended to be somewhat higher when the number of independent packing facilities located

³ The Division elected not to challenge the JBS acquisition of Smithfield. Some time after the Division filed a formal Complaint challenging its proposed acquisition of National, JBS withdrew its bid for that company.

⁴ Shipping costs are much lower for pre-fed cattle.

near a feedlot was greater.⁵ From these results, along with other pieces of evidence, we concluded that eliminating one of only two or three independent packing facilities that were located relatively near feed lots would result in lower winning bid prices for cattle supplied by those feed lots.

One other issue in our decision to challenge the JBS acquisition of National is especially worth noting. The potential harm from enhanced monopsony power in this case, while it was found to be likely, was not predicted to be very large in percentage terms. Concern was heightened, however, by two additional pieces of information. The first is that the volume of commerce in the market was enormous—billions of dollars per year. Hence, even an anticompetitive effect as small as, say, 1%, could lower payments to feed lots of tens of millions of dollars per year. Second, the merger-specific efficiencies from the deal were found to be exceedingly small. In our judgment, the expected net harm from the deal was likely to be quite large.

2.3 Northwest/Delta: An Airline Merger Gets off the Ground

In the summer of 2008, Delta Airlines and Northwest Airlines proposed to merge their operations.⁶ The networks of these two large carriers' operations overlapped quite a bit; however the vast majority of the overlaps were on routes where one or both of the carriers offered only "connect" service via their hubs and where there was substantial competition from other airlines. In a limited number of city-pairs, however, there was a nonstop horizontal overlap as well; on service between (respectively) Atlanta, Cincinnati, and Salt Lake City, where Delta operates major hubs, and the domestic hubs (Detroit, Minneapolis, and Memphis) operated by Northwest.

Key challenges in our investigation included estimating a) the potential anticompetitive effects on the overlap (nonstops and connects), and b) evaluating and estimating the size of potential merger-specific efficiencies, which the parties claimed would be in the many hundreds of millions of dollars annually.

Beginning with connecting service, there are literally thousands of domestic city-pairs where Northwest and Delta both offer connecting service, including many where both carriers have significant market shares. We were unable to find any empirical support for adverse competitive effects in markets where the two carriers' face competition from another nonstop carrier or from a Low Cost Carrier (LCC),⁷ although we did find some evidence of small potential harm on other one-stop routes.

⁵ Our economists investigated the possibility that these empirical findings might have been the result of spurious correlation—i.e., that some other variable, not included in the model, was responsible for both the lower prices and the greater number of bidders. After looking at candidate missing variables that might in theory have generated our results, we found this alternative explanation to be unsupported by available evidence.

⁶ The deal was ultimately permitted to go forward without objection from the Antitrust Division.

⁷ "LCCs" are non-"legacy" airlines, such as Southwest and AirTran who, due to lower labor and other expenses, commonly have lower operating costs than do the major "legacy" airlines (which have large networks and extensive union collective bargaining agreements that originated in the era before the deregulation of the U.S. airlines in the late 1970s. Numerous empirical studies have found a significant "LCC effect" on fares—i.e., controlling for the number of carriers serving a route, it makes a difference whether one or more of them happens to be an LCC.

Of the nonstop overlap routes, there were two categories of markets potentially affected adversely by the merger. One was the five city-pairs in which only Northwest and Delta provided nonstop service. The other was the four city-pairs where Northwest, Delta, and a non-legacy LCC provided nonstop service. Our economists used both publicly available airline data and internal data provided by the carriers to examine the likely consequences of both a merger to monopoly of nonstop carriers and a merger of two legacy carriers where the remaining nonstop competitor would be an LCC.

Because the city-pairs where the only nonstop service was provided by Northwest and Delta were markets where the carriers operated hubs at different endpoints, in estimating the merger's likely competitive effects in these markets our economists compared the performance of carriers in city-pairs where nonstop service was provided by two carriers—each with a hub at only one end—with prices and output in city-pairs where nonstop service was provided between two hubs of the same carrier (e.g., by Northwest between its Minneapolis and Detroit hubs).

Consistent with prior research (and conventional wisdom), nonstop domestic service was found to be a relevant antitrust market. In other words, absent efficiencies or entry, a hypothetical monopolist would profitably raise price by at least a small, but significant and nontransitory amount. We found also that the remaining nonstop competition from an LCC on a route would lower considerably the potential anticompetitive effect in a nonstop market.

Nevertheless, because there were so few nonstop overlap markets and the volume of commerce on these routes was relatively small, potential harm in these city-pairs was predicted to be modest at most. This implied that if only a fraction of the efficiencies claimed by the parties from combining their large, and largely complementary, networks were found likely to be generated by the merger, these would easily exceed any potential for harm from the deal.

Turning then to efficiencies, we considered two potential benefits from the merger; cost savings and increased value to travelers. On the first of these, many of the claimed cost savings were merely asserted, rather than documented. This made it impossible for us to credit them in our analysis. Some of the claimed savings were credited; in particular, those relating to more efficient utilization of gate space. There was, however, an offsetting factor, including estimates from the parties themselves of significant one-time integration costs.

On the benefits side of the ledger, the proposed merger might generate consumer benefits by facilitating schedule improvements, by allowing for a more efficient allocation of aircraft across the network, and through marketing synergies that could make the merged carrier's service more attractive to consumers.

Our analysis was complicated by, among other things, the fact that following the merger the parties were planning to adjust the schedules of both carriers' flights. Generating our own independent predictions of post-merger scheduling was beyond our ability. Therefore, in conducting our analysis we worked with a number of different hypothetical post-merger schedules, including one produced by the parties as part of what appeared to be a legitimate business effort to assess post-merger opportunities, as well as on the actual "but-for" schedules for October 2008 that the two carriers had published the previous June.

Our methodology for calculating benefits involved comparing the forecasted demand for the merged carrier under plausible post-merger schedules with the forecasted demand for Northwest and Delta under the but-for schedules. By doing so we could determine how the post-merger schedule changes would be likely to affect the demand for the merged carrier's service. With no change in rivals' services, a change that allows the merged carrier to attract more customers implies an increase in consumer welfare.

Using demand elasticity estimates that are consistent with the empirical literature on the airline industry, along with some neutral assumptions about the nature of consumer demand, our economists were able to calculate the change in consumer welfare implied by the predicted traffic changes for each hypothetical post-merger schedule. Our best estimates of the likely increases in consumer welfare significantly exceeded the feared harm to consumers in the overlap routes served by the two carriers. On this basis we concluded that the merger was likely procompetitive and ought not be challenged.

It is worth noting that our methods for estimating merger-specific benefits produced figures that were far below those claimed by the parties. One major reason for this was that the model used by the parties' experts employed a measure of convenience (a variable that essentially measures how many flights a carrier offers on a route and how well-timed they are) that generated predictions about future traffic flows that were wildly inconsistent with the predictions made by the model that Northwest uses in the ordinary course of its business.

2.4 Yahoo!/Google: A Searching Analysis of a Proposed Joint Venture⁸

In June 2008, Google and Yahoo! announced an advertising agreement that would have allowed Google, at Yahoo!'s discretion, to serve ads on Yahoo! Websites.⁹ In exchange, Google agreed to share a percentage of the revenue generated by these ads with Yahoo!. The deal was non-exclusive, with an initial term of 4 years and two 3-year extensions at Yahoo!'s option. Google and Yahoo! delayed implementation of the agreement to allow the Antitrust Division to review its competitive implications. On November 5, 2009, facing advertiser opposition and the specter of a lawsuit by the Antitrust Division, Google and Yahoo! abandoned the agreement.

2.4.1 Background on the Search Advertising Business

Today's search advertising platforms all adhere to the same core business model. In response to a user's search query, a platform serves up "algorithmic" search results accompanied by ads both immediately above and to the right of the search results. Advertisements directly above the algorithmic search results generate the most clicks,

⁸ Carl Shapiro represented one of the parties during this investigation. He had no input into the drafting of this section.

⁹ As is explained below, in essence Yahoo! would transmit a search query to Google, which would return ads for Yahoo! to display alongside its search results.

followed by those to the right, with positions higher on the web page generating more clicks. When a user clicks on an ad, the advertiser whose ad is clicked pays the platform; ads that are not clicked generate no revenue for the platform.

Each advertiser's cost per click, as well as its advertisement's position on the page, are determined by auction. Advertisers submit bids that specify the maximum cost per click they are willing to pay. Each advertiser's bid is multiplied by its ad's quality score, a measure of the ad's expected relevance to the user derived from historical click-through rates and other factors. Ads are then ordered, with higher bids leading to ad placement in those positions that generate the most clicks. When an ad is clicked, the advertiser pays an amount determined by the bid and quality score for the next highest ad on the page.¹⁰ At least for Google's advertising platform, in the specific case in which all ads' quality scores are equal, the advertiser pays the bid of the next-highest bidder. This has led many observers to describe the auction mechanism as a generalized second-price auction.¹¹

Because advertisers could not possibly submit bids on the universe of all user queries, bidding is organized around relatively common keywords. Much of the "secret sauce" of these platforms inheres in the algorithms that they use to aggregate bids on keywords upon which advertisers bid, and their skill in populating pages with relevant ads in response to a wide variety of (at-times obscure) user queries. Importantly, platforms also employ proprietary algorithms to determine how ads are configured on the page. Many queries result in no ads being promoted to the prime real estate immediately above the algorithmic results, or even in no ads being shown at all.

Determining how and where a platform will serve up particular ads, if done well, add considerable value to searchers and advertisers by converting advertisements into final sales. However, and in contrast to claims made by the parties,¹² a concern during our investigation was that the agreement might have enabled Google more fully to exploit advertisers by manipulating auction parameters such as reserve prices, promotion thresholds, and even the quality scores themselves.

Despite the fact that Google and Yahoo! jointly represent a dominant share of the search advertising market, it is not immediately obvious that an agreement would have led to higher prices or that if prices were to increase the effect would be substantial. If Google and Yahoo! users are distinct—for example, if those who search for "tennis racket" on Google do not also search for that product on Yahoo! (and vice-versa)—and if an advertiser's margin is constant, the advertiser may not view the two platforms as substitutes. If so, even a full merger of the two platforms might have no immediate effect on price.

¹⁰ <http://googleblog.blogspot.com/2008/10/quality-scores-and-ad-auctions.html>.

¹¹ See Athey and Ellison (2007), Edelman et al. (2007), and Varian (2007) for more information on these auction mechanisms.

¹² From a Google blog post: "[The agreement] does not let Google raise prices for advertisers. Google does not set the prices manually for ads; rather, advertisers themselves determine prices through an ongoing competitive auction. We have found over years of research that an auction is by far the most efficient way to price search advertising and have no intention of changing that." <http://googleblog.blogspot.com/2008/06/our-agreement-to-provide-ad-technology.html>.

To see this, consider an advertiser that runs local radio ads to reach populations in both San Francisco and Chicago. In making its purchasing decisions, this advertiser likely invests in each campaign until the benefit of an additional sale, or conversion, is exactly offset by its cost. The price of a television spot in San Francisco has no bearing on the profit-maximizing calculus for Chicago. The possibility that search behavior by internet users followed this pattern (for example, that those searching for “tennis rackets” on Google virtually never searched also for tennis rackets on Yahoo!—and vice-versa) needed to be explored.

Such arguments, it should be noted, break down if advertisers are budget constrained, which may be fairly common in the world of search advertising where many advertisers outsource their campaigns to third parties. The argument also breaks down when advertisers face increasing marginal costs or capacity constraints. In these cases, the advertiser likely will view the two media as substitutes and will shift purchases in response to changes in relative prices.

Ultimately, whether substitution is significant or not is an empirical question. Answering it proved challenging in several respects. To begin with, advertisers have a variety of ways in which they might respond to price shocks. Consider an advertiser that finds itself displaced from the top ad position on an advertising platform when a competitor suddenly begins to bid more on a keyword. The advertiser can increase its bid to regain the top position, increase its bids on related keywords on the same platform, increase its bids on the same or related keywords on other platforms, or simply do nothing. Further complicating the analysis is the question of how quickly advertisers respond to changes in relative prices. Advertisers are a heterogeneous group. Some monitor tens of thousands of keywords in-house on a daily basis, others outsource their campaigns to specialized advertising firms known as search engine marketers, or SEMs, subject to budget constraints; still others bid on a few keywords and check in every few weeks to see how their ads are performing. Not knowing how, and how quickly, advertisers respond to price shocks made reliable estimation of cross-elasticities of demand between the platforms difficult.

An additional challenge was logistical. Given the vast number of user queries that they receive each day, Google and Yahoo! generate, if anything, too much data. Even with statistical sampling, the size of the data sets produced by Google and Yahoo! made structural modeling of the underlying auctions infeasible given the need for expeditious review of the transaction.

2.4.2 Potential Efficiencies

Google is, by far, the largest and most successful search engine on the planet. Part of its success owes to its great skill in helping advertisers monetize their advertisements by generating clicks, and ultimately sales, in response to ads. The proposed agreement was touted for its potential to enable both consumers and advertisers on Yahoo! To benefit from its outsourcing this function to Google at least for some keywords.

Potential benefits to advertisers included the prospect of Yahoo! outsourcing unused ad space to Google. If the agreement allowed Google to fill this space with ads, resulting in additional sales of advertisers' good and services, this would surely qualify as a benefit. Beyond that, Google might also have been able to replace Yahoo ads with

more relevant ads, generating both more clicks and more conversions per click. Both would have resulted in increased advertiser surplus and consumer surplus. Some evidence developed during our investigation suggested that Google outperformed Yahoo! in both respects.

2.4.3 Potential Competitive Harm

When the revenue-sharing agreement between Google and Yahoo! was announced, several commenters argued that the deal would result in a price floor at the Google price. According to the argument, the agreement creates incentives for Yahoo! to outsource any query for which Google was able to extract a higher price (net of Google's revenue share) from advertisers than Yahoo!. As a result, Yahoo! could immediately increase its price on these queries.

This argument, however, fails to account for the fact that some underlying factors were responsible for the existence of a price differential in the first place. Yahoo! could, of course, decide to increase its price post-agreement; but this would drive many advertisers away from its platform and towards Google for the same reasons it drove them from its platform prior to the agreement.

Among more conventional theories of harm is the standard diversion theory that underlies most unilateral effects analysis of differentiated products mergers. Because Google would earn, post-agreement, a share of ad revenue on queries outsourced by Yahoo!, Google would have an increased incentive to raise prices on its own platform. While the theory is certainly valid, harm through this mechanism may have been fairly limited. Because Google would only recapture lost revenues on those queries outsourced by Yahoo! and because Google would keep only a fraction of ad revenue on outsourced queries, its incentive to increase price would be much weaker than would have been the case were Google and Yahoo! to merge outright.

Beyond this standard revenue recapture analysis, another consideration was the ability of Google potentially to coordinate pricing with Yahoo! by controlling the configuration of ads on Yahoo! web pages. For example, depending on the precise final terms of their agreement, Google could reduce the number of ads displayed immediately above the algorithmic results on both its own platform and Yahoo!'s. By doing so, it may have been able profitably to restrict industry output and achieve, or come close to achieving, the quantity effect we would expect to observe if Google and Yahoo! merged.¹³

Beyond the potential for harm from immediate price effects, the agreement created a risk of even greater harmful effects on innovation over the immediate to long run. In a world without the agreement, Yahoo! reaps the benefits of its innovations for all its user queries. With the agreement, Yahoo!'s return on any investments in new search advertising technologies is limited to what it earns on those queries it populates with its own ads after it has implemented its new technology. To the extent that Yahoo!

¹³ As with any such arrangement, it would (of course) need to be the case that neither Yahoo! nor Google would find it profitable to defect by showing additional ads on its own websites. Both platforms, however, have available a number of mechanisms to monitor compliance.

outsourced a large fraction of its queries to Google, its incentive to innovate would undoubtedly be reduced, especially if innovations are incremental.

In addition, because scale is so important in the search advertising business, the effect of having Yahoo! outsource significant business to Google could precipitate a downward spiral, with serious consequences to Yahoo!'s future competitiveness. Search advertising platforms are successful largely to the extent that they match users with relevant ads, and "learning by doing" is a big part of what helps these platforms improve. Knowing which ads are likely to generate a user's interest is in part a numbers game: The more opportunities that the platform has to observe similar users responding to similar ads, the better is the platform's ability to match ads to any individual user. The greater the increased profits to Yahoo! from outsourcing, the more outsourcing Yahoo! would have found profitable. And to the extent Yahoo! found the outsourcing of ads to be profitable, this would undermine its future ability to provide relevant ads in response to user queries.

While any future degradation of Yahoo!'s platform would have obvious negative implications for consumers and advertisers, it would affect also the many Internet publishers who contract with Google or Yahoo! to provide search technology for their websites. Currently, Google, Yahoo!, and Microsoft compete to offer search bars at the top of partners' web sites as well as the contextual ads that are displayed alongside partners' content. Ad revenue generated under these syndication agreements is shared with publishers and is often the only way, other than display or banner ads, for publishers to generate returns on their investments in content. If Yahoo! were no longer able to compete aggressively for these syndication contracts, publisher revenues would surely decline. And, faced with lower revenues, publishers may bring less content to market on the Internet.

In the end, the Division determined that the potentially substantial harms from a combination of higher prices in the near term and, perhaps more importantly, weakened future innovation and competition by Yahoo! against Google, were sufficiently large and likely so as to exceed the admittedly nontrivial benefits potentially arising from an outsourcing agreement between the parties.

3 Competition Advocacy

3.1 Star Alliance Antitrust Immunity

Over the past 15 years, a number of international airline alliances have formed and grown. Under such alliances, carriers from different countries cooperate to handle passengers travelling internationally. For example, United Airlines is a member of the Star Alliance, which contains twenty-one carriers, including Air Canada, Lufthansa, SAS, Swiss, and TAP. Members of airline alliances agree to provide alliance customers with certain joint services such as code sharing, coordinated reservations and baggage transfer, through ticketing, frequent flyer reciprocity, and lounge sharing. International airline alliances have proven beneficial to connecting passengers who necessarily must

travel on more than one carrier to complete their journey.¹⁴ In some ways, these alliances are a substitute for mergers between carriers operating in different countries; such mergers are prohibited by limitations in many countries, including the U.S., on foreign ownership of airlines that operate domestically. Since these alliances involve various forms of cooperation among carriers who are actual or potential competitors, they raise significant antitrust issues.

The U.S. Department of Transportation (DOT) has the authority to approve international airline alliances and grant them antitrust immunity on international routes. Carriers have sought antitrust immunity from DOT to shield themselves from possible antitrust liability as they cooperate to carry traffic on international routes. In some cases, such cooperation involves joint setting of fares and the sharing of revenues earned from international passengers. Over the past 16 years, DOT has exercised its authority to grant antitrust immunity to more than twenty alliance agreements. During this time, most of the largest airlines in the world have become members of one of three large alliances, often with antitrust immunity. Many of the immunity grants made by DOT over the years were intended, in large part, to further the foreign policy goals of inducing the governments of the foreign alliance partners' home countries to enter into "open skies" agreements with the U.S., thus promoting international aviation competition.

Within the Star alliance, United and Lufthansa operate a joint venture that was granted antitrust immunity in 1996. These two carriers instituted revenue sharing in 2003, when they changed the name of their venture to the Atlantic Plus (A+) Alliance. Additionally, there is an immunized portion of the Star Alliance containing United, Air Canada, Lufthansa, Austrian, BMI, LOT, SAS, Swiss, and TAP. Both of these immunity grants involve "carve-outs" that exclude certain hub-to-hub routes on which the carriers compete head-to-head for non-stop traffic. Where they are workable, carve-outs offer an attractive solution: They preserve competition on the affected routes while allowing the carriers in the alliance to realize broader alliance efficiencies.

In considering an alliance application, DOT is required by statute to evaluate the impact of a proposed alliance agreement on competition. As explained by the DOT:

"In particular, we cannot approve agreements that substantially reduce or eliminate competition unless they are necessary to meet a serious transportation need or to achieve important public benefits, when that need or those benefits cannot be met or achieved by reasonably available alternatives that are materially less anticompetitive." DOT Show Cause Order, April 2009, p. 6.

In July 2008, Continental Airlines, in conjunction with United Airlines and other members of the immunized portion of the Star Alliance, applied to the DOT for permission for Continental to be admitted to the Star Alliance, including its immunized portion.¹⁵ These Applicants also proposed an integrated joint venture, named A++, among Continental, United, Air Canada, and Lufthansa, patterned after the immunized A+ joint venture. In April 2009, DOT issued a Show Cause Order that indicated its

¹⁴ See Brueckner (2003), Brueckner and Whalen (2000), and Whalen (2007).

¹⁵ Joint Application of Air Canada, et al. Docket OST-2008-0234.

intention to grant authority for Continental to join the immunized Star Alliance and further immunizing the A++ joint venture.¹⁶ The DOT Show Cause Order (pp. 7–13) states that the DOT’s competitive analysis treats immunized agreements as a merger, applying traditional Clayton Act merger standards.

The Antitrust Division has considerable experience in analyzing international airline alliances. The Division analyzes an immunity application much like a merger, since the immunized carriers will have the legal ability to cease any competition among themselves for activities within the scope of the immunity that is granted. In cases where the Division believes that the proposed alliance will substantially diminish competition, we communicate our concerns to DOT, in meetings and/or in formal comments. In response to the application for Continental to join the Star Alliance with antitrust immunity, the Division met with DOT personnel and subsequently filed comments, which are available to the public in redacted form.¹⁷ The Division’s principal concerns arose in four related areas, which we discuss in turn.

First, the Division was concerned about a loss of competition on specific trans-Atlantic routes from New York where Continental competed against a Star Alliance member on a hub-to-hub basis. Concerns were greatest on routes where antitrust immunity would reduce the number of non-stop competitors from two to one. These were routes to Stockholm and Copenhagen (SAS), Zurich (Swiss) and Lisbon (TAP). In addition, on the New York to Zurich route the number of non-stop competitors would decline from three to two. The Division generally favors “carving out” such routes from antitrust immunity, i.e., limiting the grant of immunity to preserve competition on these routes. This approach has been taken in numerous previous grants of immunity. However, the DOT Show Cause Order did not include carve-outs for any of these routes, stating (p. 12): “We tentatively find that each of the nonstop overlap markets will continue to have adequate competition on a nonstop or connecting basis.”

The key question was thus well posed: On trans-Atlantic routes, is competition from connecting traffic sufficiently potent that the elimination of all non-stop competition would not harm passengers? The empirical centerpiece of our comments was designed to answer this question by studying the relationship between the number of non-stop carriers on a trans-Atlantic city-pair route and the fares charged on that route.¹⁸ Using data for the third quarter of 2008, we focused on one-coupon (one-way) and two-coupon (round trip) coach class (fare class X) tickets. To control for the economics of hubs, we restricted our attention to hub-to-hub routes, of which there were 65. We used as additional explanatory variables the mileage of the route and the route’s population potential. We found that reducing the number of non-stop competitors on a trans-Atlantic hub-to-hub route from two to one raises the average non-stop fare on that route by 15%, *ceteris paribus*. Likewise, reducing the number of non-stop competitors from three to two raises the average non-stop fare by 6.6%. These findings show directly that the number of non-stop rivals affects fares, whatever disciplining impact connecting traffic has on non-stop fares. We also observed that across the 65

¹⁶ Show Cause Order, Docket OST-2008-0234, April 7, 2009.

¹⁷ Comments of the Department of Justice on the Show Cause Order, Docket OST-2008-0234, June 26, 2009.

¹⁸ For further details, see “Appendix B: Empirical Addendum” to the Department of Justice comments.

routes studied, 73% of coach passengers fly non-stop, even though average connecting fares are 10% lower than average non-stop fares.

This empirical work demonstrated that granting immunity would significantly diminish competition on the routes where Continental competed head-to-head with a Star alliance member. In other words, granting antitrust immunity on these routes would be costly to passengers. But that left open the question of whether there might be even larger *benefits* to passengers of including these routes in any immunity grant. To answer this question, we conducted empirical work to learn whether antitrust immunity is necessary to achieve significant efficiencies in serving connecting passengers. Any such efficiencies could, in principle, loom large, since the number of connecting passengers served by the Star Alliance is far greater than the number of non-stop passengers served on the overlap routes previously noted. Consistent with the empirical literature, we found that international alliances do indeed lead to significantly lower fares, which is consistent with the theory that they reduce a “double marginalization” problem associated with interline traffic. Critically, however, we found that fares charged by immunized alliances are 3.6% *higher* than fares charged by non-immunized alliances, *ceteris paribus*. In other words, while alliances generate benefits to connecting passengers, antitrust immunity does not. Indeed, many alliances conduct substantial operations without antitrust immunity.

Second, we were concerned about the proposal in the Show Cause Order to *remove* the pre-existing carve-outs on two routes where United and Lufthansa were the only non-stop competitors: Chicago to Frankfurt and Washington, DC, to Frankfurt. The empirical analysis just cited was directly relevant to this issue. The Show Cause Order proposed removing these carve-outs to enable the A++ joint venture to operate with full antitrust immunity, but the Division was concerned that removing the carve-outs would elevate fares on these two routes without providing offsetting benefits to passengers. Third, we had similar concerns with regard to several city-pair routes between the U.S. and Canada where Continental and Air Canada were the only two carriers offering non-stop traffic: Houston to Calgary, Houston to Toronto, Cleveland to Toronto, and New York to Ottawa. The Division’s experience and previous analysis indicated that elimination of non-stop competition on routes within North America would lead to higher fares, notwithstanding the remaining competition from connecting traffic and notwithstanding the threat of entry onto the route in question.

Fourth, the Division was concerned about a loss of competition between Continental and United to provide service to mainland China. Continental and United were the only U.S. carriers providing non-stop service to Beijing from the U.S. mainland. Together, they account for 57% of the available non-stop seats to Beijing, with non-immunized Star member Air China accounting for another 41%. Since United and Continental serve China from different gateway airports in the U.S., the issue was not the loss of non-stop competition, as it was on the trans-Atlantic routes. Rather, Continental and United were direct competitors in providing connecting service from many U.S. cities to Beijing. Under the DOT’s Show Cause Order, that competition would be lost.

The Division suggested carve-outs and other limitations on the immunity grant, so as to allow the Applicants to achieve alliance efficiencies without harming passengers on certain problematic routes: “Thus, the final Order should carve out the transatlantic

and transborder markets where competitive harm is most likely to occur, maintain existing carve outs, and limit immunity to transatlantic markets.” (DOJ Comments, p. 36) Following the filing of our comments, the DOT modified its Show Cause Order. The DOT added a number of carve-outs to the antitrust immunity eventually granted in its Final Order.¹⁹ In the end, the DOT accepted some, but not all of the limitations that the Division recommended to the immunity that was granted to the Applicants. The Division’s empirical work was critical to our competition advocacy in this case.

3.2 Reverse Payments in Pharmaceutical Patent Settlements: Cipro Brief

All three branches of the Federal government have been struggling for some years with so-called “reverse payments,” in the context of pharmaceutical patent settlements. The term “reverse payment” refers to a situation arising from the peculiar structure of the Hatch–Waxman Act, which established the rules governing the introduction of generic drugs that compete against branded pharmaceuticals that have been subject to patent protection. The courts have been reviewing challenges to patent settlements involving reverse payments. Congress has been considering legislation to bar such agreements or sharply restrict them. And the Federal Trade Commission (FTC) and the Antitrust Division have been formulating their enforcement policies and positions regarding these agreements.

The relevant fact pattern arises (approximately) as follows: A would-be generic entrant seeks the approval of the U.S. Food and Drug Administration (FDA) to offer a generic version of a patented drug (along with the entrant’s claim that the patent is invalid or not infringed); the patent holder that sells the branded drug sues the would-be generic supplier for patent infringement; and the two reach a settlement of their patent dispute which contains the following two provisions: (1) an agreement by the generic supplier to refrain from entering the market for at least a portion of the time remaining on the patent, and (2) a substantial payment from the patent holder to the generic supplier. This latter element is commonly called a “reverse payment” because it flows from the patent holder to the alleged infringer, unlike conventional royalty payments (or infringement damages payments), which flow in the other direction.

There is a large literature that analyzes reverse payments,²⁰ which have been the subject of considerable attention, especially by the FTC, over the past decade. We focus here on the *Cipro* case before the Second Circuit, in which the Antitrust Division articulated a specific legal and economic standard to be applied to reverse payment cases.²¹ In this case, the patent holder is Bayer, the generic is Barr, and the drug in question is the antibiotic ciprofloxacin hydrochloride (Cipro). The settlement between Bayer and Barr involved a cash payment from Bayer to Barr of nearly \$400 million

¹⁹ “Final Order,” Docket OST-2008-0234, July 10, 2009.

²⁰ See, for example, Lemley and Shapiro, “Probabilistic Patents,” *Journal of Economic Literature*, (2005), 19(2), 75–98, and the references cited therein. For a recent paper with new empirical findings on agreements involving reverse payments, see Hemphill (2009).

²¹ *Arkansas Carpenters Health and Welfare Fund, et al. Bayer et al.*, Case 05-2851-cv(L), Second Circuit, Brief for the United States in Response to the Court’s Invitation, July 6, 2009.

along with an agreement by Barr to refrain from introducing a generic version of Cipro until 6 months before the expiration of Bayer's patent.

The antitrust dangers associated with reverse payments are straightforward: the incumbent supplier, in this case Bayer, has a strong incentive to pay the would-be entrant, in this case Barr, to refrain from entering the market and driving prices down. Due to the peculiar structure of the Hatch–Waxman Act, by paying off one generic supplier, the patent holder can in some cases forestall entry by *any* generic for some period of time. Blocking generic entry leads to sharply higher joint profits, since generic entry typically reduces prices substantially, benefiting consumers at the expense of the patent holder that markets the branded drug. In the absence of a patent, a payment by an incumbent supplier to a would-be entrant in exchange for the entrant's agreement to stay out of the market would be blatantly anticompetitive.

Nonetheless, a number of courts have been reluctant to find settlements that involve reverse payments to be illegal agreements under the Sherman Act, §1, observing that patents generally confer on their owners the right to exclude others from practicing the patented invention. Indeed, the Second Circuit itself, in the *Tamoxifen* case, ruled that reverse payments do not violate the Sherman Act unless either (1) the settlement extends the monopoly beyond the patent's scope, (2) the patent was procured by fraud, or (3) the infringement suit settlement was objectively baseless.²² Despite this prior ruling, the panel considering the *Cipro* case solicited the views of the United States.

The core economic and legal issue in these cases is how to handle the apparent tension between the Sherman Act, which prohibits agreements that restrict competition, and the Patent Act, which grants exclusionary rights to patent holders. The Antitrust Division's brief takes the position that reverse payments are “presumptively illegal” because they restrict competition *beyond* the rights to exclude that are inherent in the patent. More specifically, the brief observes that the patent grant confers on the patent holder a bundle of rights, including the right to seek a court-ordered injunction to prevent another party from continuing to make or sell an allegedly infringing product.

However, invoking this right necessarily requires the patent holder to bear a number of risks. Most notably, the court may find the patent to be invalid, or not infringed. In addition, the court may refuse to issue a preliminary or a permanent injunction.²³ These risks are greatest for “weak patents”: those relatively likely to be found, in full patent litigation, to be invalid or not infringed. Private settlements involving reverse payments allow patent holders patents to exclude rivals without bearing the risk that their patent will be found invalid or not infringed. Once patents are correctly viewed as probabilistic—any given patent may or may not be found valid and infringed if fully litigated—it is clear that a reverse payment allows a patent holder, especially one with a weak patent, to achieve greater exclusionary power than is inherent in its patent.

²² *In re Tamoxifen Citrate Antitrust Litigation*, 466 F.3d 187 (Second Circuit, 2006).

²³ Preliminary injunctions apply during the pendency of the patent litigation; they are rarely issued. Permanent injunctions apply after the patent is found valid and infringed. The Supreme Court's decision in the *eBay* case made it more difficult for patent holders to obtain permanent injunctions, especially in cases where the patent holder does not compete against the infringer; *eBay Inc v. MercExchange, L.L.C.*, 547 U.S. 388 (2006).

The brief filed by the Antitrust Division explains this economic logic, putting it in the context of the relevant patent and antitrust laws and precedents. For reasons given in the brief, the Antitrust Division favors making reverse payments presumptively unlawful, rather than *per se* unlawful, which would allow the courts to learn more about such agreements, potentially allowing reverse payments in specific situations where they promote rather than stifle competition. As of this writing, the Second Circuit is still considering the case.

4 Conclusion

In spite of the economy-wide downturn during the past year, the Division continued to be a busy and intellectually active place. Proposed mergers presented a significant number of challenging economic issues to investigate and evaluate, and we took advantage of a number of competition advocacy opportunities to provide input on important issues of legal and economic policy.

This coming year will present additional challenges as the Division, jointly with the FTC, will be holding hearings to help us reassess, and potentially modify, the Horizontal Merger Guidelines. Moreover, the Division, jointly with U.S. Department of Agriculture, will be holding a series of hearings on several issues relating to competition in the agriculture industry.

Beyond that, important challenges remain with respect to formulating and implementing sound economic policies towards single-firm conduct, and in continuing our ongoing efforts to forge greater convergence with our sister competition authorities around the world.

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